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UREDINEÆ of Bourbon County, Kansas, A provisional List of. A. O. Garrett. Trans. Kansas Acad. Sci. 18:147-150. 1903.

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UREDO plucheæ Syd. n. sp., in foliis vivis Plucheæ camphoratæ. Ann. Mycolog. 1:330. July 1903.

USTILAGINEÆ, A Series of Specimens illustrating. A. B. Seymour. Jour. Mycol. 9:83-4. May 1903.

VELÆA arguta (Torr. & Gr.) Clt. & Rs., host to Puccinia sphalerocondra Lindroth n. sp. Acta Soc. Faun. et Fl. Fenn. 22:63. 1902.

VELÆA hartwegi (A. Gr.) Clt. & Rs., host to Puccinia lindrothii Syd. r. sp. Acta Soc. Faun. et Fl. Fenn. 22:63. 1902.

WALDSTEINIA fragarioides Tratt., host to Ramularia waldsteiniae Ell. & Davis n. sp. Trans. Wisc. Acad. Sci. Arts & Let. 14:99. 1903.

WEBSTER, Hollis. Clitocybe trullisata Ellis. [Popular description and habitat.] Boston Mycological Club, Bulletin No. 20. [3 pp. 1 pl.] June 1903.

WEEMS, J. B. and Pammel, L. H., *see Pammel, L. H. and . .*

WOOD, decaying, beneath the soil, host to Scutiger subradicatus Murrill n. sp. Bull. Torr. Bot. Club, 30:431. Aug. 1903.

NOTES FROM MYCOLOGICAL LITERATURE. VI.

W. A. KELLERMAN.

PROFESSOR J. H. SCHAFFNER FURNISHES ANOTHER INSTALLMENT of his Laboratory Outlines for the elementary study of Plant Structures and Functions from the standpoint of evolution, namely, the Higher Fungi and Lichens, in the Journal of Applied Microscopy, 6:2275-7, April 1903. The subjects are: Saccharomyces cerevisiae Meyen, Beer and Bread Yeast; Morchella esculenta (L.) Pers., Morel; Aspergillus herbariorum (Wigg.) Fisch., Common Green Mould; Uncinula salicis (DC.) Wint.; and Ustilago maydis (DC.) Tul.

NOTES ON SOME OF THE FUNGOUS DISEASES affecting Horticultural Crops, to-wit, Black Knot (Plowrightia morbosa Sch.), The Crown Gall (Dendrophagus globosus), Peach Yellows, and Peach and Plum Rosette, are given by R. S. Mackintosh in Alabama Agricultural Experiment Station Bulletin No. 124:93-101, May 1903.

IN THE ACTA PRO FAUNA ET FLORA FENNICA (22:13 et seq., 1902) J. Ivar Lindroth in the course of his article on Die Umbelliferen-Uredineen, points out that the American Rust on Osmorrhiza brevistylis DC., O. longistylis DC., O. nuda Torr., and Osmorrhiza sp. ought to be listed as Puccinia osmorrhizae (Peck) Lindroth, with synonomy as follows: Aecidium osmorrhizae Peck, Puccinia myrrhis Peck 25th Rep., P. chaerophylli Tranzsch. F. Ross. 217, P. bupleuri Berk. and P. pimpinellae Aut. p. p. This Rust is different from Puccinia chaerophylli Purt. Puccinia myrrhis Schw. occurs on Chaerophyllum procumbens Crantz. In his enumeration no North American species occur as hosts for Puccinia pimpinellae (Strauss) Mart., or for Puccinia chaerophylli Purt.

BEITRAEGE ZUR BIOLOGIE DER UREDINEEN, VON W. BANDI, in Hedwigia, 42:118-128, 42:129-152, 9 Mai 1903 and 4 Juli 1903, details culture experiments with Phragmidium subcorticium (Schrank) Winter, and Puccinia caricis-montanae Ed. Fischer. Die Untersuchungen sollen ein Beitrag sein zu der Frage der Spezialisation bei den Rostpilzen.

THE CONCLUDING PORTION OF TYCHO VESTERGREN'S ZUR PILZFLORA DER INSEL OESEL is given in Hedwigia, Heft 3, 1903. A large number of species is listed accompanied with critical notes; several new species are described.

SEVEN NEW SOUTH AMERICAN SPECIES OF FUNGI IMPERFECTI are described by H. et P. Sydow in Beiblatt zur Hedwigia, 42:(105)-(106), Mai 1903, under the title Beitrag zur Pilzflora Süd-Amerikas.

EINIGE NEUE JAPANISCHE UREDINEEN IV, Bieblatt zur Hedwigia, 42:(107)-(108), Mai 1903, contains the descriptions of eight new species by P. Hennings.

P. HENNINGS PUBLISHES EINE KURZE AUFZAEHLUNG of species received from the museum of Frau Gräfin Scheremetjeff, under the title Beitrag zur Pilzflora des Gouvernements Moskau, in Beiblatt zur Hedwigia, 42:(108)-(118), Mai 1903. Diagnoses of several new species are given.

A VERY CONVENIENT, MUCH CONDENSED OUTLINE, by W. A. Orton, of the Plant Diseases in the United States in 1902, is given on pp. 714-719 of the Yearbook of the United States Department of Agriculture, 1902 (published 1903). The fungi

causing the diseases and their prevalence are indicated, grouped according to the hosts.

GEORGE T. MOORE GIVES A VALUABLE ARTICLE on Bacteria and the Nitrogen Problem, in the Yearbook of the United States Department of Agriculture 1902:333-42, illustrated with 6 full-page plates. Investigation of the nitrogen-fixing bacteria has been carried on at the Bureau of Plant Industry in the laboratory of plant Physiology. It has been found "that by gradually reducing the amount of Nitrogen in the culture medium it is possible to greatly increase the nitrogen-fixing power of the germs, and that by proper manipulation their activity may be increased from five to ten times that which usually occurs in nature."

IN MALPHIGIA, ANNO XVII, FASC. I-III an interesting article by Pietro Voglino is entitled Sullo sviluppo della Ramularia aequivoca (Ces.) Sacc. The fourth item in his Conclusione is as follows: La Ramularia aequivoca (Ces.) Sacc., é molto probabilmente lo stato conidiale della Stigmatea ranunculi Fries.

A PROVISIONAL LIST OF THE UREDINEAE OF BOURBON COUNTY, KANSAS, by A. O. Garrett, is published in Vol. XVIII (pp. 147-150) of the Transactions of the Academy of Science, 1903. Hosts and dates of collecting are given after each of the listed species. The following are included: 9 species of Aecidium, 3 Coleosporium, 2 Gymnosporangium, 1 Melampsora, 20 Puccinia, 1 Pucciniastrum, 2 Uredo, and 8 Uromyces. Description is given of the Aecidia of Puccinia nigrescens Peck, which "has not been previously reported in America." Underground sori of teleutospores of Puccinia podophylli Schw. were found May 10th and 27th.

BULLETIN DE LA SOCIETE MYCOLOGUIQUE DE FRANCE, TOME XIX, 2e FASCICULE, issued April 30, 1903, contains the following articles: Pavillard et Lagarde, Myxomycètes des environs de Montpellier; P. Vuillemin, Importance taxinomique de l'appareil zygosporé des Mucorinées; P. Vuillemin, Le genre Tieghemella et la serie des Absidiées; G. Delacroix, Travaux de la Station de pathologie végétale; M. Molliard, Observations sur le Cyphella ampla Lév., obtenu en culture pure; Marin Molliard, Sur une condition que favorise la production des péritheces chez les Ascobolus; G. Bainier, Sur quelque espéces de Mucorinées nouvelles ou peu connues; L. Magnin, Un cas d'empoisonnement par l'Amanita muscaria.

THE ARTICLES IN BULLETIN TRIMESTRIEL DE LA SOCIETE MYCOLOGIQUE de France, Tome XIX, 3e Fascicule, are: E. Boudier, Quelque Ascomycètes nouveaux du Jura; Costantin et Lucet, Sur un Rhizopus pathogène; F. Guéguen, Recherches morphologiques et biologiques sur quelques Stysanus; N. Patouillard, Additions au Catalogue des Champignons de la Tu-

nisie; E. Boulanger, Sur la culture de la Truffe à partir de la spore; L. Matruchot, Sur la culture artificielle de la Truffe; M. Barbier, Liste annotée d' Hyménomycètes des environs de Dijon; A. Maublanc, Sur quelques espèces nouvelles de champignons inférieurs; M. Herrera, Sur le rôle prédominant des substances minerales dans les phénomènes biologiques.

DEANE B. SWINGLE GIVES HIS STUDIES IN SPORE FORMATION in the sporangia of Rhizopus nigricans and in Phycomyces nitens in Bulletin 37 (pp. 1-40) U. S. Department of Agriculture, Bureau of Plant Industry. The article is illustrated by six lithographic plates. After a resumé of work previously done on the Mucorineae by Corda (1838), van Tieghen (1873-6), Strasburger (1880), Bügsen (1882), Léger (1896), Thaxter (1897), Harper (1899), and Hans Bachmann (1899), touching the life history and gross anatomy of nearly all the species — there being "in regard to the cytological details the widest difference of opinion, chiefly owing to the fact that only a few forms have been studied with the aid of the most recent methods" — Mr. Swingle details his work on the two species, followed by eight or nine pages of general considerations and summary, also a page of Index to Literature. It is interesting to note that in the four genera of Mucorineae most carefully studied no two are alike in respect to the processes of spore formation.

ANNALES MYCOLOGICI, VOL. I, NO. 3, MAI 1903, contains the following articles: Guilliermond, Contribution à l'étude de l'épiplasme des Ascomycètes et recherches sur les corpuscules métachromatiques des Champignons; Patouillard, Note sur trois Champignons des Antilles; Maire et Saccardo, Notes mycologiques; Saccardo, Una malattia crittogamica nelle frutta del mandarino (Alternaria tenuis, forma chalaroides Sacc.); Traverso, Diagnoses Micromycetum novorum italicorum; Sydow, Beitrag zur Pilzflora des Litoral-Gebietes und Istriens; Bubák, Zwei neue, Monocotylen bewohnende Pilze; Dietel, Bemerkungen über die Uredineen-Gattung Zaghouania Pat.

DASS EIN VERHAELTNISMAESSIG GROSSER PROZENTSATZ DER PILZE doppelt und mehrfach, oft in ganz verschiedenen Gattungen beschrieben ist, leidet keinen Zweifel, is the keynote to an article by Franz v. Höhnel, in Beiblatt zur Hedwigia, 42:(185)-(188), July 4, 1903, entitled Mykologische Irrtumsquellen. It is really a second communication on this subject; — and there as here many cases are enumerated and corrected.

REMARQUES TAXONOMIQUES ET CYTOLOGIQUES SUR le Botryosporium pulchellum R. Maire (Cephalosporium dendroides Ell. & Kell.) by René Maire, published in Annales Mycologici (1:335-340, July 1903), alludes to the articles published in the Journal of Mycology concerning this fungus. As to the syste-

matic aspect it may be said that the name accepted by us (i. e. Corda's name) is rejected by Mons. Maire, his statement being: "En résumé, à notre avis, les dénominations antérieures à la découverte de la *tête condifère,* c'est à dire à Costantin, doivent être reléguées dans le chaos des anciens noms douteux et inapplicables." As two species are involved his list is as follows: 1. Botryosporium pyramidale Cost.; 2. Botryosporium longibrachiatum (Oud.) Maire, (Botrytis longibrachiata Oud., B. [Polyactis] doryphora Pound & Clem., B. pulchellum R. Maire, Cephalosporium dendroides Ell. & Kellerm.)

Bacteria in Modern Economic Agriculture is the title of an instructive article by Professor Albert Schneider in the August number of the Popular Science Monthly (66:333-343). The Rhizobia, or Nodule Bacteria, "assimilate free nitrogen in artificial culture media or when not symbiotically associated with leguminous plants." Therefore it would seem probable that Rhizobia of leguminous plants might be modified by culture so as to induce them to grow on the roots of other plants, say corn, wheat, rye, barley, etc. Experimental results are not yet conclusive, yet "the indications are that they will finally prove successful." Then there may be other organisms or soil bacteria, not found in leguminous root nodules, that can fix free nitrogen, and which may be especially adapted to gramineous plants. "It would appear that the Bacillus ellenbachiensis of Caron is such an organism. . . . It would be especially advantageous, because, in contradistinction to Rhizobia, it forms spores. Spore-bearing cultures would be desirable because they would keep better and longer."

The Fifth Installment of the Polyporaceae of North America, by William Alphonso Murrill, is published in the Bulletin of the Torrey Botanical Club (30:423-434, Aug. 1903). The genera Crytoporus, Piptoporus, Scutiger, and Porodiscus are included, the species being those found chiefly under the genus Polyporus in Sacardo. Those treated formerly (groups of the genus Fomes, as this term is generally used) are for the most part perennial with large stratified sporophores. The plants included in this paper are annual and their fruit-bodies are less conspicuous, their mycelium being usually comparatively limited in extent. They are mostly terrestial, somewhat fleshy and allied to the Boletaceae. Full synonomy, notes and distribution are given. One new genus is proposed, also three new species; ten new names (or new combinations) are given.

Bruce Fink Discusses Some Ecologic Factors relative to the distribution of Lichens, in Some Common Types of Lichen Formations, Bulletin of the Torrey Botanical Club, 30:412-418, July 1903. He gives a list of the Lichen species

most commonly occurring in the two formations, namely, The Lecanora Formations of Exposed Bowlders, and The Lecanora calcarea contorta Formations of Exposed Horizontal Limestone Surfaces (or of Limy Pebbles).

BULLETIN No. 44, BUREAU OF PLANT INDUSTRY, U. S. Department of Agriculture, (issued July 18, 1903) is devoted to the subject of Bitter Rot of Apples, the authors being Hermann von Schrenk and Perley Spaulding. It is illustrated with twelve plates. It is an exhaustive treatise giving an historical account, distribution, description of the rot, the bitter-rot fungus, the canker stage, remedial measures, and index to literature. The Bitter Rot (or Ripe Rot) of Apples was, according to Curtis's catalogue, in the United States before 1867, but it was not until 1874 that the fungus was described by Berkeley. Names in common use as Gloeosporium fructigenum, Gl. rufomaculans, and Gnomoniopsis fructigena, have been relegated to synonomy by the use of a new generic name, Glomerella, proposed by the authors — not however published here for the first time as might be supposed: see Science, N. S. 17:751. 8 May 1903.

A NOTICE OF WORK DONE ON THE WHITE ROT OF THE GRAPE (Coniothyrium diplodiella) by Gy. de Istvánffi is given in the Botanical Gazette (p. 147-8, Aug. 1903), being a review of that author's Etudes sur le rot livide de la vigne, published by the Hungarian Minister of Agriculture in 1902. A minute description of the development of the disease is given, including the reactions induced in the host plant by the fungus. The most interesting part is that which deals with the effects of various toxic substances on the fungus.

B. O. LONGYEAR GIVES Some Suggestions for the Beginner in Collecting and Studying the Fleshy Fungi, in the June No. of the Journal of Applied Microscopy and Laboratory Methods (6:2369-73, 1903).

COLLECTING AND PRESERVING LICHENS is the title of a two-page article by E. E. Bogue, for the benefit of beginners, in the June No. of the Journal of Applied Microscopy and Laboratory Methods (6:2373-4, 1903).

THE THIRD INSTALLMENT OF BACTERIOLOGY FOR HIGH SCHOOLS by W. D. Frost and E. G. Hastings is published in the June No. of the Journal of Applied Microscopy and Laboratory Methods (6:2383-5, 1903). This deals with the microscopical examination of Bacteria.

PROFESSOR JOHN H. SCHAFFNER CONTINUES HIS LABORATORY OUTLINES for the Elementary Study of Plant Structures and Functions from the Standpoint of Evolution in the June No. of the Journal of Applied Microscopy and Laboratory Methods

(6:2387-8, 1903). To represent the Higher Fungi [continued] and Lichens he uses Bovista plumbea, Parmelia caperata, Sticta amplissima and Endocarpon miniatum.

THE GENUS FOMES is the 3d installment of the Polyporaceae of North America, by William Alphonso Murrill, Bulletin of the Torrey Botanical Club, 30:225-232, April 1903. Fomes, usually credited to Fries, was used by him for a subdivision of the genus Polyporus. Gillet (1878) raised Fomes to generic rank. The author gives a "synopsis" (dichotomal key) to the 12 species — two of which are new species, and three others receive new names. Full synonomy and distribution, also notes are given for each of the species.

OOGENESIS IN SAPROLEGNIA BY BRADLEY MOORE DAVIS, Contributions from the Hull Botanical Laboratory, XLVI, Botanical Gazette, 35:233-249, 320-349, plates IX and X, April and May 1903, is concerned chiefly with the events of oogenesis and a comparison of this process with the development of zoospores. The paper concludes with Theoretical Considerations, which deals with a number of topics suggested by the study in relation to recent investigations upon Phycomycetes and Ascomycetes, followed by an alphabetical list of the authors of the literature cited.

A STUDY OF THE FOOD VALUE OF SOME OF THE EDIBLE FUNGI of Ames, Iowa, by J. B. Weems and Alice W. Hess, is given in the Proc. 23d An. Meeting Soc. Prom. Agr. Sci. 1902. (pp. 165-172.) During the summer of 1901 the authors collected and analyzed Coprinus atramentarius, C. micaceus, Hirneola auricula-judæ, Hydnum coralloides, Morchella esculenta, Lycoperdon giganteum, L. gemmatum, Pleurotus sapidus, and P. ulmarius. Tables are compiled also by the analysts. This statement is made: Though the full value of the mushroom is materially lowered when the deduction is made for the non-digestable protein, and lowered more than the full value of the vegetables when the undigestable fat and carbohydrates as well as the protein is deducted, yet the mushroom would fall within the rank of the fresh vegetables if the whole of the carbohydrates and fats were digestable.

HOLLIS WEBSTER GIVES AN INTERESTING DESCRIPTION of the peculiar Clitocybe trullisata Ellis (Boston Mycological Club, Bulletin No. 20, June 1903) which may be found in "any old sandy field" in Eastern Massachusetts, for example about Plymouth, on Cape Cod, the dunes of Ipswich or the farther inland sandy plains. The fungus looks as if it hadn't much of a stem. There is a stem, long and surprisingly stout and swollen, but it is out of sight, deeply buried in the sand. This stem is of a metallic violet color when the sand is rubbed off; the interior of the broken stem shows same color. A dark violaceous tint appears in the

gills though the spores are white. A full-page plate in the Bulletin gives a good idea of the appearance of this Clitocybe.

A LIST OF SPECIES OF FUNGI, Hymenomycetes, Gastromycetes, and Ascomycetes, by Jennie F. Conant, is given in a four-page Bulletin (No. 19) of the Boston Mycological Club, issued Feb. 5, 1903, which represents the collection by members, exhibited at the Horticultural Hall, Boston, during the year 1902. The interesting list is too long to count — say over three hundred species.

A ROSETTE DISEASE OF POTATOES, attributed to the sterile fungus Rhizoctonia, is the title of Bulletin 139, Ohio Agr. Exp. Sta., April 1903. Perhaps guilty but not proved would express the attitude of mind of the author of the Bulletin — at least he says "The sterile fungus, Rhizoctonia, is indicated as the cause in the instances stated, by the constant presence and a high degree of probability attaches to this indication." A list of some articles relating to diseases of the Potato attributed to Rhizoctonia includes twenty items chronologically, arranged the dates being 1858-9 to 1902.

CONTRIBUTIONS FROM THE CRYPTOGAMIC LABORATORY OF HARVARD UNIVERSITY, LV, by R. Thaxter, consists of Mycological Notes, 1-2, namely, A New England Choanephora (described by Berkeley in 1875 under the name of Rhopalomyces cucurbitarum), and Notes on Monoblepharis. Objection is entered against dividing the latter into genera (or even subgenera) which Lagerheim has proposed. A Key is appended for the six species of this alga-like genus Monoblepharis. This No. of the contributions appears in Rhodora, 5: 97-108. April 1903.

A MINNESOTA SPECIES OF TUBER, namely Tuber lyoni, is reported by Fred K. Butters, in the June No. (1903) of the Botanical Gazette (pp. 427-31). The specimens were found March 11, in the leaf-mould about the base of small group of Bass-wood trees, in a mature condition, doubtless formed late in the previous autumn.

THE MORE IMPORTANT DISEASES OF FORAGE PLANTS as given by David Griffiths in Forage Conditions and Problems of Eastern Washington and Adjacent Regions, U. S. Department of Agriculture, Bureau of Plant Industry, No. 38 (pp. 43-4), are caused by the following Smuts: Ustilago hypodites, U. scolochloa, U. bromivora, U. striæformis, and Tilletia fusca. This class of parasitic fungi injures more (the author states) than one would suppose, the development of native economic plants. Reference is made in one case to meadows of the valuable Sprangle-top (Scolochloa festucacea), "in which one-half to two-thirds of the vegetation consisted of this grass, and one-half of the plants were smutted."

OUTLINE OF THE HISTORY OF LEGUMINOUS ROOT NODULES AND RHIZOBIA with Titles of Literature concerning the Fixation of Free Nitrogen by Plants III, is the title of a short article by Albert Schneider in the Minnesota Botanical Studies, Third Series, Part II, July 3, 1903 (pp. 133-9). The first installment of titles (by Dr. D. T. McDougal) was published in this Series in 1894, the second (by Prof. Albert Schneider) in 1897. These and the present list include 780 titles. In a history to be prepared the following outline will be followed: First Period: Initial Study of Leguminous Root Tubercles — from Clos (1848) to Lawes and Gilbert (1860); Second Period: Collateral Investigation which led to the Discovery of the True Nature of Root Tubercles — from Lawes and Gilbert (1860) to Frank (1879); Third Period: The Scientific Investigation of Leguminous Root Tubercles and Rhizobia — from Frank (1879) to Schneider (1893).

LICHENS OF THE NORTHERN BOUNDARY is the Title of the VIIth paper of Contributions to a Knowledge of the Lichens of Minnesota, by Bruce Fink, published in Part II (pp. 167-244), Minnesota Botanical Studies, July 3, 1903. A long list of Lichen Formations is discussed, followed by an enumeration of 310 species and varieties with dates and habitats.

PROF. ALBERT SCHNEIDER PUBLISHES HIS THIRD CONTRIBUTION to the Biology of Rhizobia under the title of Notes on the Winter and Spring Condition of Rhizobia and Root Tubercles, Botanical Gazette, 36:64-7, July 1903. He says that most of the Rhizobia are killed during the winter months; the tubercles of perennial herbaceous legumes attain their full growth during the early part of the first season, mostly die and decay at the close of the second season.

FLIES AS CARRIERS OF BACTERIA, work done by two students in the Eastern Illinois State Normal School, is published and illustrated in School Science, 3:16-20, April 1903; the same is reproduced in Jour. Appl. Micr. 6:2402-4, July 1903. "The work is of value, not only on account of its scientific interest, but also because it points the way to a new field of effort opened to secondary students."

A GALL UPON A MUSHROOM, caused by dipterous larvae of Mycetophilidae, found at Ithaca, N. Y., Sept. 12, 1892 — the plants being two specimens of Omphalia campanella — illustrated by several figures, and described in detail, by Charles Thom, is published in the Botanical Gazette, 36:223-5, September 1903.

THE BOSTON MYCOLOGICAL CLUB has issued interesting Bulletins from time to time. Nos. 15 and 16, (8 pp.), June 1901 are devoted to the genus Coprinus, author Edwin A. Daniels. Descriptions are given of all the species so far reported for the

United States, Massee's Classification being followed. Nos. 17 and 18, (8 pp.), December 1901, are searching reviews of several books on Mushrooms, by Hollis Webster.

W. C. COKER OFFERS IN THE JOURNAL OF APPLIED MICROSCOPY, 6:2411-2, July 1903, some suggestions on Algae and Fungi for class work. Rhizopus is not always satisfactory for showing sexual reproduction and Sporodinia grandis was found to be a good substitute.

BACTERIOLOGY FOR HIGH SCHOOLS, IV. Microscopical Examination (continued) is the subject of a short illustrated article by W. D. Frost and E. G. Hastings, Journal of Applied Microscopy, 6:2426-8, July 1903.

THE MYCOLOGICAL ARTICLES IN THE REPORT OF THE BOTANIST, 23d Annual Report of the New Jersey State Agricultural Experiment Station, for the year 1902 (pp. 337-422, published in 1903), are as follows: Notes upon Club-root, The Mildew of Lima Bean, The Asparagus Rust, Fungi as related to Weather, Notes upon some Rusts and Mildews at Wernersville, Pa., and Fungus Enemies of Plants in Nova Scotia.

THE BLACK ROT OF CABBAGE caused by the bacterium Pseudomonus campestris (Pam.) Smith, can not be prevented by the removal of the affected leaves, is the conclusion reached after four years of practical field tests by F. C. Stewart and H. A. Harding, whose work is reported in full in the New York Agricultural Experiment Station Bulletin 232:43-65, Pl. I-II, April 1903.

MRS. CAROLYN W. HARRIS LISTS THE LICHENS belonging to Sticta and to Nephroma and Solorina, with popular descriptions or notes and several figures, in the Bryologist, 6:55-8, and 76-9, July and Sept. 1903.

BULLETIN 117, KANSAS EXPERIMENT STATION contains an account of Bacteria of the Soil with results of cultures carried on through a series of years by N. S. Mayo and A. T. Kinsley. They call attention to the high bacterial content of soil containing Buffalo Grass, and to the marked decrease in the bacterial content in the western part of the state.

THE FOURTH NUMBER OF THE ANNALES MYCOLOGICI (1:297-390, July 1903) contains the following articles: Traverso, Primo elenco die Micromiceti di Valtellina; Sydow, Neue and kritische Uredineen; Maire, Remarques taxonomiques et cytologiques sur le Botryosporium pulchellum R. Maire (Cephalosporium dendroides Ell. & Kell.); Heinze, Einiges, über Säurebildung durch Pilze, insbesondere auch über Essigsäure- und Oxalsäurebildung durch Aspergillus niger; Zahlbruckner, Neue Flechten.

In an Article Published in Hedwigia (Beiblatt, 42: (179)-(181), Juli 1903,) it is stated by P. Dietel that a Phragmidium on Potentilla, usually referred to either Ph. potentillae (Pers.) Karst., or Ph. obtusum (Kze. & Schmidt) Wint., is a new species and it is described under the name of Ph. potentillae-canadensis Diet. The same author also refers the Coleosporium on Veronia noveboracensis, heretofore called C. vernoniae B. & C., to the genus Stichopsora; and hence records it as Stichopsora vernoniae (B. & C.) Diet.; likewise our Coleosporium solidaginis is given as Stichopsora solidaginis (Schw.) Diet.

A Beautiful Pluteolus, is noted by H. Webster in Rhodora, 5:197-9, Aug. 1903. The delicate Pluteolus expansus Peck was observed at Alstead, N. H., late in July and a careful study justifies the place of this plant in classification now occupied — at first having been placed in the genus Galera. Mr. Webster points out that the substance of the stipe and pileus is plainly not homogeneous. He adds: "The viscid, greenish yellow caps, elevated on long slender stems, white tinged with yellow, announced a novelty at first sight."

Hypochnus sp., Another Apple Rot following Scab, is reported at some length and illustrated by four plates in the New York Agricultural Experiment Station Bulletin No. 255, July 1903. This is similar in appearance to Cephalothecium roseum which the same author, H. J. Eustace, showed also to be parasitic. It seems to be an undescribed species —a wound parasite and can not grow through sound epidermis.

The Section of Lepidei is presented in the dichotomal key, by F. S. Earle, of the North American species of Lentinus in Torreya, 3:58-9, April 1903. It contains thirty-nine species. Other keys in the same periodical by the same author, published so far this year, are species (26) of Panus (pp. 86-87), species (10) of Pluteolus (pp. 124-5), of Galera (pp. 134-6) thirty-eight species.

Articles on Bacteriology for High Schools, plain directions for work, illustrated with figures, have been published this year in the Journal of Applied Microscopy by W. D. Frost and E. G. Hastings, on pp. 2270-2273 (April), 2383-5 (June), and 2426-8 (July).

A New Name is again Proposed for the Bitter-rot Fungus by Herman von Schrenk and Perley Spaulding, — Science, N. S., 17:749-51, 8 May 1903. The name is Glomerella rufomaculans (Berk.) Spaulding & von Schrenk. The genus Glomerella von Schrenk & Spaulding n. n. replaces Gnomoniopsis Stoneman. Septoria rufomaculans on Grapes was described by Berkeley in 1854. He described Gloeosporium fructigenum on apples in 1856. These two are the same. In 1898 Clinton, finding

the perfect stage of the fungus, placed it in Miss Stoneman's genus Gnomoniopsis; the latter being invalidated by preoccupation, the name as above is now the appropriate one.

WILLIAM ALPHONSO MURRILL CONTINUES his studies of the Polyporaceae of North America, giving the fourth installment, namely, the genus Elfvingia, in the May. No. of the Bulletin of the Torrey Botanical Club (30:296-301, 1903). Now we have Elfvingia fomentaria for Fries' Polyporus reniformis; Elfvingia megaloma for what has usually been called Polyporus applanatus Pers. by American botanists, the commonest species of Shelf-Fungus, though it is Polyporus leucophaeus Mont. as now agreed by all mycologists.

FUNGI ON OLD LOGS AND STUMPS is the title of a short popular article in the June (1903) No. of the Plant World (6:139) by C. L. Shear. A beautiful plate of a Hydnum and a Polyporus is given.

THE MYCOLOGICAL ARTICLES IN HEDWIGIA, Heft 2 (Band XLII, 28 März 1903), are as follows:—Zur Pilzflora der Insel Oesel, Tycho Vestergren; Fungi australiensis, P. Hennings; Ueber die Uromyces-Arten auf Lupinen, P. Dietel; Beitrag zur Kenntnis einiger Phycomyceten, Fr. Bubák.

THE MYCOLOGICAL ARTICLES IN HEDWIGIA, Heft, 3 (Band XLII, 9 Mai 1903), are as follows:—Zur Pilzflora der Insel Oesel (Schluss), Tycho Vestergren; Beiträge zur Biologie der Uredineen, W. Bandi; Beitrag zur Pilze Süd-Amerikas, H. et P. Sydow; Einige neue japanische Uredineen IV, P. Hennings; Beitrag zur Pilzflora des Gouvernements Moskau, P. Hennings.

THE MYCOLOGICAL ARTICLES IN HEDWIGIA, Heft 4 (Band XLII, 4 Juli 1903), are as follows:—Beiträge zur Biologie der Uredineen (Schluss), W. Bandi; Sphæroideen aus Thüringen, A. Diedicke; Ascomyceten-studien I, H. Rehm; Ueber einige Ramularien auf Doldengewächsen, Franz v. Höhnel; Bemerkungen über einige nordamerikanische Uredineen, P. Dietel; Einige deutsche Dung bewohnende Ascomyceten, P. Hennings; Mykologische Irrtumsquellen, Franz v. Höhnel; and Zwei neue Früchte bewohnende Uredineen, P. Hennings.

FASCICULUS III OF SYDOW'S MONOGRAPHIA URDINEARUM was published May 15, 1903. The pp. are 385-592; the list of species 596-879. The host plants are the families Umbelliferæ to Moraceæ. Fifteen new species (or varieties) are described, of which two belong to North America, namely, Puccinia euphorbia intumescens Syd. nov. var., on Euphorbia calyculata (Mexico), and Puccinia gemella Diet. & Holw. n. sp. (in Litt.) on Caltha leptosepala (Tacoma, Wash.). The new name Puccinia solitaria Syd. replaces Puccinia simplex Peck (nec Kœrn), and

claytoniata (i. e. Puccinia claytoniata [Schw.] Syd.) is restored to the Rust that occurs on Claytonia; the common designation for this has been Puccinia mariæ-wilsoni Peck.

H. DIEDICKE CALLS ATTENTION TO THE FACT that Die Aecidien der Puccinia stipæ (Op.) Hora (Annales Mycologici, 1: 341-3, July 1903), of which the name of Arthur appears as the author in Bulletin of the Iowa Agricultural College 160, 1884, and in the Bulletin from the Laboratories of Natural History, State University of Iowa (1898, p. 389), have been obtained by cultures on species of Thymus. The author also details his own experiments showing that the æcidial stage of this Rust also inhabits Salvia silvestris.

THE EDITOR OF ANNALES MYCOLOGICI has decided to publish also lichenological literature, and in the July No. (pp. 354-361) prints the Latin diagnoses of ten new species of Lichens by A. Zahlbruckner. One new genus is proposed, namely, Pseudoheppia A. Zahlbr.

IN THE ARTICLE NEUE UND KRITISCHE UREDINEEN by H. & P. Sydow, Annales Mycologici, 1:324-334 July 1903, nine of the species are American. It is interesting to note that one of them is on leaves of a host, namely, Aecidium aikeni on Thalictrum purpurascens, that harbors also another known fungus, *i. e.* Aecidium thalictri-flavi. The authors point out that Tracy and Earle's Puccinia notabilis is a synonym of Puccinia splendens Vize.

ZUR ENTWICKELUNGSGESCHICHTE, MORPHOLOGIE UND SYSTEMATIK DER FLECHTEN von Birger Nilson, is the title of a thorough paper published in the Botaniska Notiser, 1903:1-33.

IN THE REVISTA AGRONOMICA (Lisboa) for June 1903, J. Bresadola describes a new genus (with one species) of Hymenogastraceæ, namely, "Torrendia Bres. n. gen.—etym. a cl. Camillo Torrend Societatis Jesu floræ mycologicæ lusitanæ scrutatore sollertissimo."

DER CHRYSANTHEMUM-ROST, II, VON DR. ERNST JACKY, published in Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten, II Abteilung, 10:369-381, 1903, deals with the question of identity of the Hemi-Puccinia that occurs on Chrysanthemum chinense in Japan, with that found in Europe and America (on Chrysanthemum indicum). Culture experiments are detailed, and the conclusion reached that they are one and the same species. The name and synonomy are as follows: Puccinia chrysanthemi Roze; syn. P. chrysanthemi chinensis P. Henn., P. pyrethri Rabh. p. p., Sydow (Monogr. Ured. 1:45), Uredo chrysanthemi Roze, and P. hieracii Mart. p .p.

THE RELATIONS OF INSECTS TO FUNGI are quite fully outlined under the above title, by Perley Spaulding in the Plant World, 6:182-4, August 1903. Many Insects are appropriated by fungi as a base upon which to grow. Some of the cases cited are cicadas, ants, locusts, chinch bugs, flies, bees, wasps, beetles, moths, and butterflies. Of plant diseases which are known to be carried by insects the author mentions Ergot, Smuts, Brown-rot, Bitter-rot, some of the Rusts, and a few of the bacterial diseases. The Ambrosia fungi are used as food by some wood-boring beetles. Honey bees have been caught taking the spores of the Bramble Rust.

THE BOTANICAL GAZETTE PUBLISHES A BRIEF REVIEW of the investigations of J. Brezezinski (Bull. Acad. Sci. de Cracovie, 1903:95-143. pls. 2-8.) who says the canker disease of trees, long attributed to Nectria ditissima, is never caused by this fungus, which in the opinion of the author is a mere saprophyte on dead portions of the bark. The canker wound is therefore one of the external manifestations of the disease (Bacteriosis) from which the tree is suffering. The author regards certain Bacteria which he found growing in the wood as the true cause of the injury — three species being described, namely, Bacterium mali on apple, B. pyri on pear, and B. coryli on Hazel.

A SHORT NOTE IN THE BULLETIN OF THE BOTANICAL DEPARTMENT, Trinidad, No. 38 (p. 551, note 523), 1903, calls attention to the occurrence in that country, recently detected, of the Cacao Disease (Witches' Broom), the Surinam disease known as Exoascus theobroma, Ritzema Bos. In the previous No. (38; p. 507, note 496) it is stated that Cordyceps ravenelii B. et C. had been found on Cacao estates in Trinidad.

THE STATE OF ALABAMA PASSED A LAW, March 5, 1903, designed (among other things) to exclude Crop Pests of all kinds from that State. We note that the following Fungous Diseases are enumerated by the State Board of Horticulture (the members of which are to carry the law into effect), as constituting "infection in trees and plants, the same when occurring in nursery stock to be destroyed:" Black Knot (Plowrightia morbosa), Crown Gall (Dendrophagus globosus), Peach Yellows, and Peach and Plum Rosette. Other states have laws pertaining to fungous diseases — to which reference will be made later.

CULTURES OF UREDINEAE IN 1902, Bot. Gaz. 35: 10-23, Jan. 1903, by Dr. J. C. Arthur, is his third article of a series of reports upon the cultures of Plant Rusts. It is devoted largely to the heteroecious grass and sedge Rusts. With two assistants he was able to do a large amount of valuable work. Forty-three species were used; in no case was success attained where definite clues derived from field observations were lacking. Fourteen

species were tried by the "guessing method" and the failures reported. Twelve species of rusts were successfully grown that have been studied with success before, reported previously by Arthur and others; some additional hosts are given. Successful cultures were made establishing the aecidial and teleutosporic association, heretofore unknown, of seven heteroecious grass and sedge Rusts. These are Uromyces aristidae E. & E., aecidium on Plantago rugelii Dec.; Puccinia jamesiana (Pk.) Arth., aecidium on Asclepias incarnata L. and A. syriaca L.; Puccinia impatientis (Schw.) Arth., aecidium on Impatiens aurea Muhl.; Puccinia subnitens Diet., aecidium on Chenopodium album L.; Puccinia amphigena Diet., aecidium on Smilax herbacea L. and S. hispida Muhl.; Puccinia simillima Arth., aecidium on Anemone canadensis L.; and Puccinia caricis-solidaginis Arth., aecidium on Solidago canadensis L., S. serotina Ait., S. caesia L., S. ulmifolia Muhl, and S. rigida L.

A KEY TO THE NORTH AMERICAN SPECIES OF STROPHARIA — 12 in number — is given by Prof. F. S. Earle in Torreya, 3:24, Feb. 1903. It is on the dichotomal plan, similar to the keys of several groups prepared by the same author last year, and previously noticed in these Notes.

RASPBERRY CANE BLIGHT AND RASPBERRY YELLOWS is the title of a Bulletin (N. Y. Agr. Exp. Sta. 226:331-366. Dec. 1902) by F. C. Stewart and H. J. Eustace. The Blight caused by Coniothyrium (possibly C. fuckelii Sacc.) not by a Phoma as previously reported by the authors. The cause of the Yellows is undetermined.

HERMANN VON SCHRENK IS THE AUTHOR OF AN EXHAUSTIVE PAPER on A Disease of the White Ash Caused by Polyporus fraxinophilus, U. S. Dept. Agr. Bureau Pl. Industry, Bull. 32: 1-20, Pl. I-V. 28 Feb., 1903. The divisions of the subject are geographical distribution, susceptibility to this disease, method of attack, description of diseased wood, the sporophore, microscopic changes in the wood, growth of the fungus in dead wood, remedies, description of the five plates.

BULLETIN DE LA SOCIETE MYCOLOGUIQUE DE FRANCE, Tome XIX, ler Fascicule, contains the following original articles: Recherches sur la germination des spores dans le Saccharomyces ludwigii Hansen, Pl. I (Guilliermond); Sur le Sterigmatocystis pseudonigra (Costantin et Lucet); Espèces critiques d'Agaricenées (Godfrin); Remarques sun la morphologie et le développement de l' Hilminsporium macrocarpum Grev., Pl. II et III, (F. Guéguen); Du rôle des Ecoles normales departmentales au point de vue de l' enseignement de la Mycologie pratique (J. Costantin).

PROFESSOR M. C. POTTER GIVES IN THE JOURNAL OF THE BOARD OF AGRICULTURE, 9:320, pl. IV, Dec. 1902, an account of a new Potato Disease, occurring in England, caused by Chrysophlyctis endobiotica (Chytridineæ) described by Schilberszky in 1896, first found in Hungary. The affected tubers present large convoluted irregular tumour-like swellings. The parasite appears in the diseased tissues as a globular protoplasmic mass (plasmodium), destitute of cell-wall and without any trace of mycelium.

MYCOLOGICAL NOTES, No. 13, (pp. 121-132) C. G. Lloyd, Cincinnati, Ohio, was issued Feb. 1903. The notes are 214-231, devoted to Catastoma (3 species), Mitremyces (3 species, all figured), and miscellaneous matters.

IN HEDWIGIA, BAND XLII, HEFT 2, pp. 76-96, is published by Tycho Vestergren an article entitled Zur Pilzflora der Insel Oesel, which is an enumeration of 290 species of Fungi collected during a six-weeks collecting trip. The groups most largely represented are Uredineæ (79 species), Ustilagineæ (12 species), Peronosporaceæ (22 species), Pyrenomycetes (41 species), Discomycetes (25 species), Sphræropsideæ (46 species), and Hyphomycetes (48 species). Descriptions of ten new species are given.

BACTERIOLOGY FOR HIGH SCHOOLS, first paper, by W. D. Frost and E. G. Hastings, is published in the Journal of Applied Microscopy and Laboratory Methods (6:2205-8, March 1903). The apparatus needed is described and the list of needed chemicals given. Such articles by specialists are to be highly commended. The few better equipped High Schools could well undertake work of this kind — but perhaps putting too much college work into them even should not be encouraged.

ONE SHORT MYCOLOGICAL ARTICLE, namely, Addenda ad Floram Sardoam by S. Belli [list and the description of a new species] is given in the Bulletino della Societa Botanica Italiana for May and June (No. 5-6, 1903).

THE ARTICLES CONTAINED IN THE SEPTEMBER (1903) NO. OF ANNALES MYCOLOGICI are as follows: Höhnel, Mycologische Fragmente; Dietel, Ueber die Teleutosporenform von Uredo laeviuscula D. et H. und über Melampsora fagi D. et Neg.; Maire et Saccardo, Sur un nouveau genre de Phacidiacées; Vuilleman, Le Syncephalus adunca sp. nov. et la série des cornutae; Saccardo e Traverso, Contribuzione alla Flora micologica della Sardegna.

DR. J. J. DAVIS HAS DISTRIBUTED HIS THIRD SUPPLEMENTARY LIST of parasitic Fungi of Wisconsin, as a reprint from the Transactions of the Wisconsin Academy of Sciences, Arts and Letters, Vol. XIV, part I. He gives many additional hosts (pp. 84-93) and a list (p. 93 et seq.) of species not recorded in the

previous lists, the latter containing 101 names. A few new species are described, and new combinations proposed. The author referring to such names as P. "caricis-asteris", P. "caricis-erigerontis" says: "As it is becoming evident that there are a number of species of Rusts on *Carices* this method of forming specific names from the generic names of both Aecidial and Rust hosts would, if carried out be of much assistance in understanding them." This is a good hint, practical in some cases — but of course the license could not be sanctioned for throwing aside heretofore published names or combinations framed in accord with the accepted usage.

A VERY COMPREHENSIVE TREATISE ON THE FUNGOUS DISEASES OF GRASSES is that by L. H. Pammel and J. B. Weems in the Iowa Geological Survey, Bulletin 1 (pp. 185-292, 1901). Historical and descriptive notes are given of all the common fungi occurring on the native and cultivated grasses. Very many text figures and plates add much to the value of the article, which will prove very useful to beginners and amateurs, and even to professional botanists. The date in the preface shows that it was completed in 1899, but evidently there was considerable delay in publication. Consequently the nomenclature is not always such as the American mycologists use to-day.

DOTT. C. MASSALONGA IN NOTE MICOLOGICHE published in Malphigia, An, XVII, Fasc. IX. pp. 419-423, discusses the following: (1) Sulla causa di un precoce disseccamento delle foglie di Quercus pubescens Willd. (with description of Gloeosporium nervicolum C. Massal. in litt.); (2) Sull antracnosi delle foglie di Populus tremula L.; (3) Di un ifomicete che vive parassita sul tallo di Candelaria vulgaris A. Massal. (with description of Fusarium lechenicolum C. Massal. in litt.)

TILLETIA IN THE CAPSULE OF BRYOPHYTES is the title of a note by Bradley M. Davis, Botanical Gazette, 36:306-7, Oct. 1903. He calls attention to the fact that the capsules of certain mosses and liverworts are sometimes attacked by fungous parasites that fill these structures with a mass of mycelium, which develops small spores as in the Ustilaginales. In 1892 Nawaschin described such an organism under the name Tilletia (?) sphagni. The author refers to Sydow's recent Tilletia (?) abscondita, in the sporophyte of Anthoceros dichotomus, and says that "Botanists are probably not aware that the liverwort, Ricciocarpus natans, harbors a parasite which appears to be similar to this Tilletia (?) described in the other bryophytes."